IN THE CLAIMS:

1. (previously presented) A method for fabricating thin film oxides, the method comprising:

forming a substrate;

treating the substrate at temperatures equal to and less than 360° C, using a high density (HD) source; and,

forming an M oxide layer overlying the substrate where M is an element selected from a group including elements chemically defined as a solid and having an oxidation state in a range of +2 to +5, excluding silicon.

2. canceled

3. (previously presented) The method of claim 1 wherein forming a substrate includes forming a substrate including M; and,

wherein using an HD plasma source includes using an inductively coupled plasma (ICP) source for plasma oxidizing the substrate.

4. (original) The method of claim 3 wherein plasma oxidizing the substrate includes inductively coupling plasma:

at a temperature of 360° C;

in a range of 13.56 to 300 megahertz (MHz) with a power density up to 10 watts per square centimeter (W/cm^2);

at a pressure of up to 500 milliTorr (mTorr);

with a mixture of inert gas and oxygen in a ratio of approximately 10:1 to 200:1; and,

with a total gas flow of approximately 50 to 200 standard cubic centimeters per minute (sccm).

5. (original) The method of claim 4 wherein inductively coupling plasma includes varying a substrate bias in a range of 50 kilohertz (KHz) to 13.56 MHz with a power density up to 3 W/cm^2.

6. (previously presented) The method of claim 4 wherein inductively coupling plasma with a mixture of inert gas and oxygen includes mixing oxygen with inert gas selected from the group consisting of helium, argon, and krypton.

7. (previously presented) The method of claim 4 wherein forming a substrate includes forming a silicon layer.

8. (previously presented) The method of claim 7 further comprising:

forming a transparent substrate layer; and,

forming a diffusion barrier overlying the transparent substrate layer and underlying the silicon layer;

wherein forming a silicon layer includes forming transistor channel, source, and drain regions in the silicon layer;

the method further comprising:

depositing a thin film of element M overlying the silicon layer;

wherein forming an M oxide layer includes forming a gate dielectric layer of the oxide; and,

the method further comprising:

forming a gate electrode overlying the gate dielectric layer.

9. (original) The method of claim 8 wherein forming a gate dielectric layer of the oxide includes forming a dielectric layer with:

a fixed oxide charge density of less than 5×10^{11} per square centimeter ($/cm^2$);

an interface trap concentration of approximately $.9 \times 10^{10}$ to 8×10^{10} per square centimeter – electron volt ($/cm^2$ eV);

a flat band voltage shift of less than 1 V;

a leakage current density lower than 10^{-7} amperes per square centimeter (A/cm^2) at an applied electric field of 8 megavolts per centimeter (MV/cm); and,

a breakdown field strength greater than 10 MV/cm.

10. canceled

11. (original) The method of claim 3 wherein forming a substrate including M includes:

forming a base layer of a material; and,

depositing a thin film of element M overlying the base layer; and,

wherein plasma oxidizing the substrate includes plasma oxidizing the thin film of M.

12. (previously presented) The method of claim 1 wherein using an HD plasma source includes using an HD plasma enhanced chemical vapor deposition (HD-PECVD) process to treat the substrate; and,

wherein forming an M oxide layer overlying the substrate includes depositing the M oxide layer.

13. (original) The method of claim 12 wherein using an HD-PECVD process to treat the substrate includes inductively coupling plasma:

in a range of 13.56 to 300 MHz with a power density up to 10 W/cm^2;

at a pressure of up to 500 mTorr; and,

with a mixture of reactive gases and precursor compounds having M in a decomposable form, the gases and precursor compounds in a ratio selected in accordance with the valence state of M.

14. (original) The method of claim 13 wherein inductively coupling plasma includes varying a substrate bias in a range of 50 KHz to 13.56 MHz with a power density up to 3 W/cm^2.

15. (original) The method of claim 13 wherein forming a substrate includes forming a silicon layer.

16. canceled

17. (previously presented) The method of claim 15 further comprising:

forming a transparent substrate layer; and,

forming a diffusion barrier overlying the transparent substrate layer and underlying the silicon layer;

wherein forming a silicon layer includes forming transistor channel, source, and drain regions in the silicon layer;

wherein depositing the M oxide layer includes depositing a gate dielectric layer; and,

the method further comprising:

forming a gate electrode overlying the gate dielectric layer.

18. (original) The method of claim 17 wherein forming a gate dielectric layer includes forming a dielectric layer with:

a fixed oxide charge density of less than $5 \times 10^{11}/cm^2$;

an interface trap concentration of approximately 2×10^{10} to $8 \times 10^{10}/cm^2\ eV$;

a flat band voltage shift of less than 1 V;

a leakage current density lower than 10^{-7} A/cm^2 at an applied electric field of 8 MV/cm; and,

a breakdown field strength greater than 10 MV/cm.

19-20. canceled

21. (previously presented) The method of claim 1 wherein forming, overlying the substrate, an M oxide layer includes

forming an M oxide selected from the group consisting of M binary oxides and M multi-component oxides.

22. (previously presented) The method of claim 1 wherein treating the substrate at temperatures equal to and less than 360° C using an HD plasma source includes using a plasma source selected from the group consisting of electron cyclotron resonance (ECR) plasma sources and cathode-coupled plasma sources.

23. canceled

24. (previously presented) An in-situ method for fabricating thin film oxides, the method comprising:

in a film processing chamber, forming a substrate;

leaving the substrate in the film processing chamber, treating the substrate at temperatures equal to and less than 360° C, using a high density (HD) inductively coupled plasma (ICP) source; and,

in the film processing chamber, forming, overlying the substrate, an M oxide layer where M is selected from a group including elements chemically defined as a solid and having an oxidation state in a range of +2 to +5, excluding silicon.

25. (previously presented) The method of claim 1 wherein treating the substrate at temperatures equal to and less than 360° C, using a HD plasma source includes using a HD inductively coupled plasma (ICP) source.

26. canceled